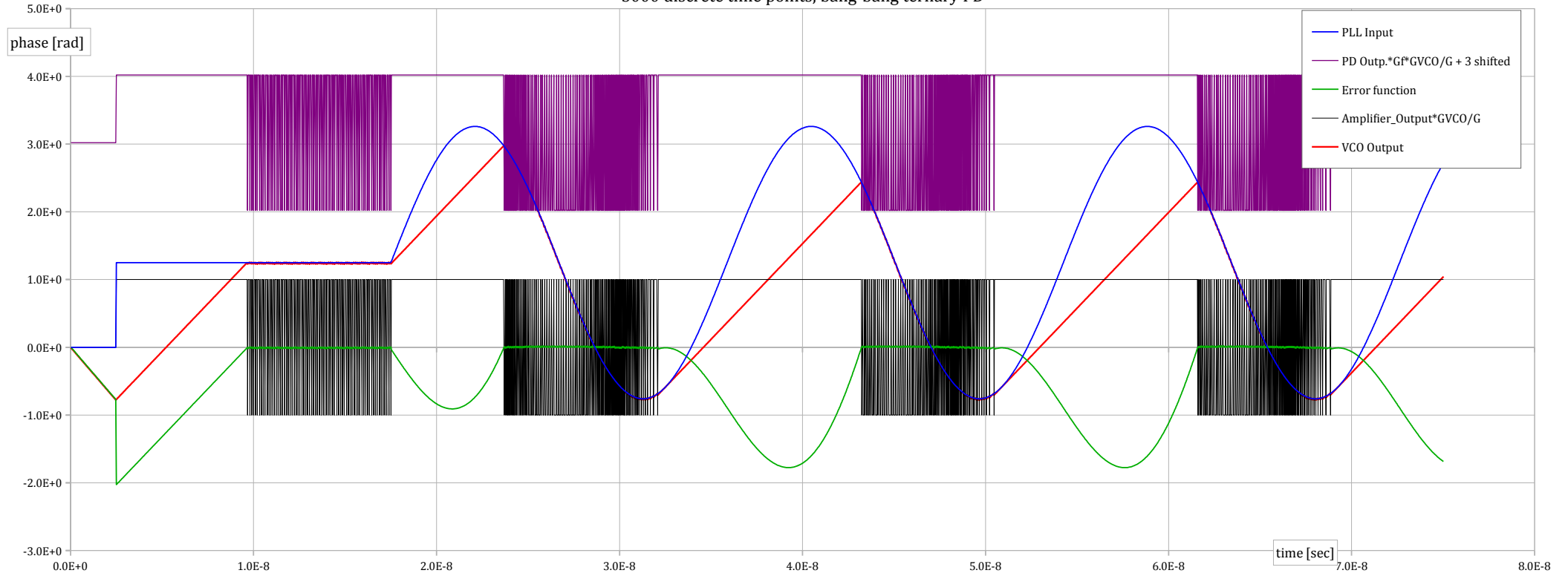


Acquisition and tracking of the 1st order type 1 PLL
3000 discrete time points, bang-bang ternary PD



Input Ramp				Input Sinusoid			
Start time [norm. time]	Initial Step [rad]	Ramp Slope [rad/sec]	Slope in ppm f _p dev.	Start time [norm.time]	Angular Frequency	Amplitude [rad]	Slew-rate [rad/sec]
100	1.250	0.00E+00	0.00E+00	700	3.42E+08	2.01E+00	6.87E+08

ω_p [rad/sec] = **6.28E+10**
one time step = $\min(\tau_1, \tau_2)$ / **67**
one time step = 2.50E-11
Comparator range [rad] = 3.1416
 G_f = Filter HF gain [V/rad] = 1.00E+00
Filter (linear) range [+/- V] = 5.00E-02

$\omega_p - \omega_{fr}$ [ppm] = **5000**
Note: G_f [rad/rad] = 0.01989437
 G_{VCO} = VCO Gain = 3.00E+10
one time step = Δt [sec] = 2.50E-11
 E_d drive unbalance [V] = 0.01047

$(\omega_{max} - \omega_{min})/2$ [ppm] = 2.39E+04
Transit. density (0 to 1) : 12.5%

 G = 5.97E+08
VCO drive range [volt] = -0.05000 0.05000

f_p [Hz] = **1.00E+10**
 f_{bb} [rad/sec] = **2.39E+08**
 f_p / f_{bb} = 42
 ω_{plp} = **1.00E+011**

LEO [rad] = **1.80E+00**
Tol. margin [rad] = 0.031
Within tolerance.
= high-frequency pole of charge pump
(smoothes transitions of filter output)

Norm. time interval: 1501..3000
Reference error [rad] = -0.01
Max error in the range 0.02
Min error in the range -1.78
Steady st. b-b sampl. err. [rad] = **-0.6013**
Steady st. lin. sampl. err. [rad] = **-0.5264**